

KOKAI PATENT APPLICATION NO. SHO 64-27659

CONTAINER FOR PAINT FOR SPRAY GUN

[Translated from Japanese]

[Translation No. LPX20176]

Translation Requested by: Steve Joseph

3M/Atherstone/UK

Translation Provided by:

Yoko and Bob Jasper
Japanese Language Services
16 Oakridge Drive
White Bear Lake, MN 55110

(651) 426-3017 Fax (651) 426-8483
e-mail: bjasper@mediaone.net

JAPANESE PATENT OFFICE (JP)

PATENT JOURNAL (A)

KOKAI PATENT APPLICATION NO. SHO 64-27659

Int. Cl. ⁴ :	B 05 B 7/02
Identification code:	
Sequence Nos. for Office Use:	6762-4F
Filing No.:	Sho 62-181775
Filing Date:	July 21, 1987
Publication Date:	January 30, 1989
No. of Claims:	1 (Total of 5 pages in the [foreign] document)
Examination Request:	Not filed

CONTAINER FOR PAINT FOR SPRAY GUN

[Supureh ganyoh toryoh yohki]

Inventor(s):	Naofumi Tsumura 12-14-209 Higashi Terauchi-cho Toyonaka-shi, Osaka-fu
	Katsuma Yagi 7-12-18-406 Tsukaguchi Hon-machi, Amagasaki-shi Hyogo-ken

Applicant(s): Kurashiki Boseki Corp.
7-1 Hon-machi
Kurashiki-shi
Okayama-ken

Agent(s): Akira Aoyama
Patent attorney
and 2 others

[There are no amendments to this patent.]

Specification

1. Title of the invention

Container for paint for a spray gun

2. Claim of the invention

[Claim 1] A container for paint for a spray gun having an inner container (1) for storage of paint (6) and main cup unit (3) that accepts the aforementioned detachable inner cup unit, which spray gun paint container is characterized by the fact that paint supply port (1d) is formed at bottom (1C) of the above-mentioned inner container (1), and valve device (2) is arranged in the aforementioned supply port (1d) and keeps the supply port in a normally-closed state; meanwhile, transfer pipe (3b) is arranged at the bottom of the above-mentioned main unit cup (3) and valve release means (4) that opens the above-mentioned valve device (2) when the above-mentioned inner container (1) is inserted into the aforementioned main unit cup, and the paint supply port (1d) is inserted inside the aforementioned transfer pipe (3b).

2. The container for paint for spray gun described in claim 1 wherein the above-mentioned valve device is a ball (2) that plugs the above-mentioned paint supply port (1d); meanwhile, the valve opening means for the above-mentioned valve device is a projecting rod (4) inserted into main unit cup (3) located inside the above-mentioned transfer pipe (3b), and when the above-mentioned inner container (1) is inserted into the above-mentioned main unit cup (3), the above-mentioned projecting rod (4) push up the above-mentioned sphere (2) from the lower part outside inner container (1) and opens the above-mentioned valve release means.

3. Detailed description of the invention

Technical field

The present invention pertains to a container for paint for a spray gun, and the invention further pertains to a paint container with a double-structure wherein the aforementioned container is equipped with a container that can be freely loaded or removed to and from the spray gun main unit.

Prior art

In general, a conventional paint container has a simplex structure where the paint is stored directly in the conventional paint container used for the spray gun, and the container is equipped with a transfer port for feeding the aforementioned paint to the spray gun main unit via the transfer port, and the aforementioned transfer port is connected to the paint supply port of the spray gun main unit. Fig. 4 shows the external view of a spray gun of the prior art.

[p. 2]

In this case, in the figure, 20 is the spray gun main unit, paint container 21 that stores the paint is inserted into the aforementioned spray gun main unit 20 to supply the paint for painting with the aforementioned spray gun main unit. The aforementioned paint container 21 includes container main unit 21a that stores the paint, and transfer pipe 21b for insertion of the above-mentioned container main unit to the spray gun main unit. Furthermore, feed line 22 for supplying compressed air to spray the above-mentioned paint as a mist is connected to the spray gun main unit. Furthermore, trigger lever 24 that controls the spraying of the above-mentioned paint is installed in the above-mentioned spray gun main unit, and the above-mentioned paint is mixed with compressed air by means of the aforementioned lever 24 and carries the paint away from exit nozzle 23 as a mist.

When painting is done with the above-mentioned spray gun, it is necessary to remove the paint container from the spray gun main unit when painting is to be done with a different color or a dissimilar paint is to be applied. The reason is because thorough cleaning is required for the paint container with a solvent when painting is to be done using a different color to prevent contamination through mixing of the colors. Otherwise, the new paint is mixed with the paint that adheres to the paint container and is subsequently dissolved by the solvent in the paint, which results in color contamination. Furthermore, when the nature of the paint is different, mixing of different paints may cause denaturing of the paint. For this reason, thorough cleaning of the paint container is required at the time of replacement of the paint. As a result, it is necessary to remove the above-mentioned paint container from the spray gun main unit. Removal of the above-mentioned paint container is complicated and after removing the paint inside the aforementioned container, the container must be unscrewed carefully so that the paint

adsorbed to the sides of the container is not spilled and the paint container screwed onto the spray gun main unit is removed. Furthermore, in the case of a paint with a high viscosity, removal of the paint requires extra time, and extra time is required for tooling in the overall coating operation. Furthermore, from the standpoint of the structure of the device, removal of the above-mentioned container from the automatic spray guns widely used in many fields as coating robots is not easy.

Technical background of the invention

Based on the above-mentioned background, the purpose of the present invention is to produce a paint container for spray gun where change and exchange of the paint can be easily achieved in a short time in a coating operation with many different colors using a coating spray gun.

Summary of the invention

(Structure)

In order to achieve the above-mentioned purpose, the present invention has the structure described below.

Namely, the paint container of the present invention used for feeding the paint to the spray gun for coating and inserting to the spray gun main unit has a structure consisting of an inner container for storage of the paint, and a main unit cup that makes possible loading and removal of the aforementioned inner container. Furthermore, paint supply port is arranged at the bottom of the above-mentioned inner container, and the valve device that keeps the supply port closed at all times is arranged at the aforementioned supply port. Meanwhile, a transfer pipe is arranged at the bottom member of the above-mentioned main unit cup and the valve release

means that releases the above-mentioned valve device when the above-mentioned inner container is inserted to the aforementioned main unit cup and the paint supply port is inserted inside the aforementioned transfer pipe.

(Work of the invention)

According to the above-mentioned structure, the paint container of the present invention has a double structure comprising an inner container and outer container. Furthermore, the above-mentioned inner container can be freely inserted to or removed from the above-mentioned spray gun used as the outer container. Needless to say, the aforementioned inner container can be freely inserted to or removed from the spray gun main unit as well. And when the above-mentioned inner container is removed from the spray gun main unit, namely, from the main unit cup, spilling of the contents inside the container is prevented by the valve device. Meanwhile, the main unit cup is attached to the spray gun main unit at all times. Therefore, the paint stored in the above-mentioned inner container is loaded to the above-mentioned main unit cup, the valve release means arranged inside the aforementioned main unit cup operates the valve device, and the paint supply port, which is normally closed, is opened and the paint inside the inner container flows into the transfer pipe of the main unit cup. On the other hand, as for the paint left behind in the above-mentioned inner container, when the aforementioned inner container is removed from the main unit cup, the valve device is closed and the inner container can be removed from the main unit cup without spilling the contents.

[p. 3]

In this case, the contents of the aforementioned inner container is tossed out, and thorough cleaning is performed for the aforementioned inner container with a solvent, and the container is

reused or a different inner container is prepared ahead of time and a change of paint can be done quickly and efficiently.

According to the above structure, changing or removing the paint can be done without removal of the paint container from the spray gun main unit. In other words, changing or removal of the paint can be done easily with the structure where the paint supplied to the spray gun main unit is stored in a removable inner container and the inner container itself is removed and changed, and paint does not adhere to the inner surface of the main unit cup mounted on the spray gun. Therefore, unlike the coating of different colors paints in the case of a conventional spray gun where cleaning of the container is required after removal of the paint container from the spray gun main unit, the above-mentioned complicated handling is not required when the paint container of the present invention is used. In other words, painting with different paints can be done efficiently. In this case, adsorption of the paint to inside of the transfer pipe does occur, but the paint can be easily washed clean when a solvent is poured into the main unit cup and the spray gun is operated for a short time. The reason is that inside the above-mentioned transfer pipe is a structure consisting of narrow passages, and when the spray gun is operated, an adequate flow velocity sufficient to remove the adsorbed paint can be achieved. Furthermore, when the paint container of the present invention is used for the spray gun for coating, change or exchange of the paint can be done easily without removing the paint container from the spray gun main unit and the paint container of the present invention can be used effectively for the paint container for automatic spray gun system such as coating robot where removal of the paint container is difficult.

Application Examples

In the following, an application example of the present invention is explained further in specific terms with reference to Fig. 1 through Fig. 3.

Fig. 1 and Fig. 2 each show the container that comprises the paint container of concern in the present invention, and Fig. 3 shows the assembled state of the containers. Paint container 10 of concern in the present application example comprises two containers where the smaller container is loaded inside a larger container and is removable, a valve device closes the exit port of the small container, and a valve release means that opens the aforementioned valve.

In other words, in Fig. 1, 1 is the inner container that forms the above-mentioned small container, and the aforementioned inner container is equipped with the container main unit 1a consisting of a cylindrical component and a funnel-shaped bottom member, and outlet pipe 1b used for releasing of paint 6 from the aforementioned container 1 so that it can flow from the container through the bottom member 1c at the center of the bottom of the aforementioned main unit 1a. The outlet pipe 1b arranged at the bottom member 1c of the above-mentioned container is formed integrally with bottom member 1c of the container at one end and the other end forms the paint supply port 1d having the end cut at an angle to the axial direction. Furthermore, sealing member 5 is arranged is formed around the above-mentioned outlet pipe 1b. Furthermore, ball 2 is arranged at the bottom 1c of the above-mentioned container main unit 1a, namely, at the entrance of outlet pipe 1b, and is positioned so that it does not shift within the container main unit 1a. When the aforementioned ball 2 is positioned at the above-mentioned funnel-shaped bottom member 1c of the container, the outlet of the funnel, that is the entrance to the outlet pipe, is closed and it functions as a valve.

Meanwhile, the main unit cup 3 that functions as the large container has a structure consisting of cylindrical main unit cup 3a having bottom member 3d at the lower end, and transfer pipe 3b with an L-shape arranged at the center of the aforementioned bottom member. The entrance of the transfer pipe 3c of the aforementioned transfer pipe 3b, which is one end of the transfer pipe, is located at the bottom 3d so as to open the above-mentioned bottom member 3d as shown in Fig. 2, and the other end member is connected with the spray gun main unit (not shown in the figure). In addition, the inner diameter of the aforementioned transfer pipe 3b is formed larger than the outer diameter of the above-mentioned outlet pipe 1b so that the aforementioned outlet pipe 1b can be stored inside the transfer pipe 3b. Furthermore, projecting rod 4 is arranged on the aforementioned transfer pipe 3b. The aforementioned projecting rod is equipped with projecting rod 4a and head member 4b formed on the end of the aforementioned projection 4a, and the above-mentioned projecting rod 4a is extended from outside the above-mentioned transfer pipe 3b and passes through inside the transfer pipe 3b to the above-mentioned main unit cup 3a and the above-mentioned head member 4b is fastened to the outer circumference of the transfer pipe 3b.

[p. 4]

As shown in Fig. 3, the paint container 10 of the present application example is a container having a double-structure. In other words, the above-mentioned inner container 1 is inserted to the above-mentioned main unit cup 3, and the above-mentioned outlet pipe 1b is stored inside the above-mentioned transfer pipe 3b, and the outer surface of the seal component 5 arranged around the aforementioned outlet pipe 1b is in close contact with the inner surface of the above-mentioned transfer pipe 3b, and the above-mentioned projecting rod 4 presses the

above-mentioned ball 2 used as the valve device of the outlet pipe 1b upward from the lower part of inner container 1 and opens the entrance of outlet pipe 1b. In other words, the above-mentioned projecting rod is used as the valve release means and opens the entrance to outlet pipe 1b of the inner container. Needless to say, the above-mentioned inner container and the main unit cup 3 are made of a material having adequate solvent resistance in this case. The same is true for the ball and projecting rod. In this case, it is necessary for the ball to be made of a material having a higher specific gravity than paint 6. In specific terms, it is desirable when the main unit cup 3 is made of stainless steel for protection of the inner container and to hold the weight of the paint. Furthermore, it is desirable when the inner container is made of a resin having an adequate solvent resistance or stainless steel. In this case, it is desirable when the ball and projecting rod are made of stainless steel.

According to the above-mentioned structure, the paint container of the present application example has a double structure consisting of an inner container and outer container, and the above-mentioned inner container can be inserted freely into or removed from the above-mentioned spray gun that provides the outer container. Needless to say, the aforementioned inner container can be freely inserted or removed from the spray gun main unit as well. And when the above-mentioned inner container is removed from the spray gun main unit, namely, from the main unit cup, spilling of the contents inside the container is prevented by the valve device. In other words, when the inner container has a ball valve device, outlet pipe 1b is closed by the ball at all times when outlet pipe 1b points downward. The reason is that the opening is closed by the ball under its own weight. Therefore, when paint 6 is poured inside the above-mentioned inner container, leakage of the paint from the aforementioned container does not occur. Furthermore,

the above-mentioned main unit cup 3 can be inserted to the spray gun main unit (not shown in the fig.) via the above-mentioned transfer pipe 3b. And when the inner container containing the above-mentioned paint is inserted to the main unit cup loaded to the spray gun main unit, the projecting rod 4 presses the above-mentioned ball 2 upward and the closed state of the outlet pipe 1b with the aforementioned ball can be released. Furthermore, the paint inside the inner container naturally flows toward the transfer pipe 3b of the main unit cup. Furthermore, sealing component 5 is arranged around the outlet pipe 1b of the inner container, and back flow of the paint toward the container main unit 1a of the inner container is prevented by the aforementioned sealing component.

On the other hand, when the aforementioned inner container is removed from the main unit cup, the ball falls down and the outlet pipe 1b is closed and the inner container can be safely removed from the ball without spilling the paint left behind the above-mentioned inner container. In this case, the paint inside the aforementioned inner container is removed from the container, and cleaning of the inside of the inner container is done with a solvent and the container can be reused, or a different inner container can be prepared ahead of time and exchanged so that changing of the paint can be done efficiently.

According to the above-mentioned structure, change or exchange of the paint can be done without removing paint container 10 from the spray gun main unit, and since the paint to be supplied to the spray gun main unit is stored in a removable inner container, changing the paint or exchanging the container itself can be done easily by exchanging the inner container; furthermore, adsorption of the paint used on the inner surface 3a of the main unit cup loaded in the spray gun main unit does not occur. Therefore, in a conventional example, in order to change

the color of the paint, the paint container 10 is removed from the spray gun main unit and the paint adsorbed to the sides of the paint container is removed by washing, but when the paint container 10 of the present invention is used, cleaning is not required. In other words, time lost due to changing the paint at the time of painting many different colors is reduced significantly, and the process can be done efficiently. In this case, adsorption of the paint to inside of the transfer pipe does occur, but the paint can be easily washed off when a solvent is poured into the main unit cup and the spray gun is operated for a short time. The reason is because the inside of the above-mentioned transfer pipe 3b is a structure consisting of a narrow passage, and when the spray gun is operated, an adequate flow velocity capable of cleaning the adsorbed paint can be achieved.

[p. 5]

Furthermore, when the paint container of the present invention is used for the spray gun for coating, changing or exchanging the paint can be done easily without removing the paint container from the spray gun main unit and the paint container of the present invention can be used effectively for the paint container for an automatic spray gun system such as a paint robot where removal of the paint container is difficult.

4. Brief description of figures

Fig. 1 and Fig. 2 each show containers that comprise the paint container of concern in the present invention, and Fig. 1 is a cross-section view of the inner container, Fig. 2 is a cross-section view of the outer container. Fig. 3 shows the assembled state of the two containers

shown in Fig. 1 and Fig. 2. Fig. 4 is an overall perspective view of the paint spray gun of the prior art.

1 ... Inner container, 1a ... Container main unit, 1b ... Outlet pipe, 1c ... Bottom member of container, 1d ... Paint supply port, 2 ... Valve device (ball), 3 ... Cup main unit, 3a ... Main unit cup, 3b ... Transfer pipe, 3c ... Entrance of transfer pipe, 3d ... Bottom member, 4 ... Valve opening member (projecting rod), 4a ... Projecting rod, 4b ... Head member, 6 ... Paint, 10 ... Paint container

Applicant: Kurashiki Boseki Corp.

Agent: Akira Aoyama, Patent attorney and 2 others

Fig. 1

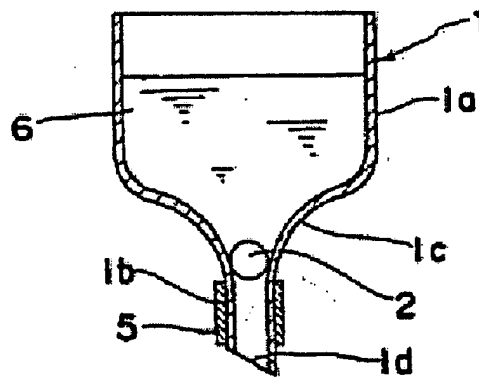


Fig. 2

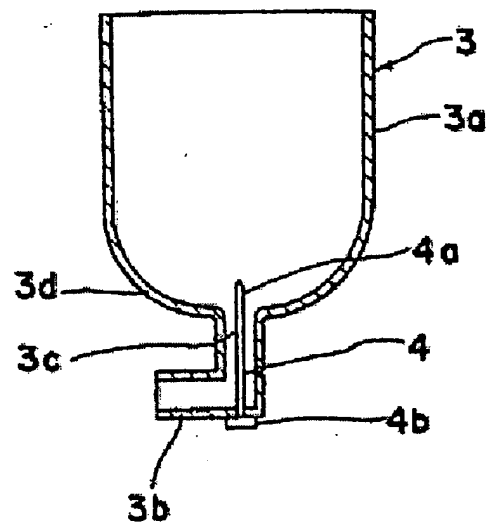


Fig. 3

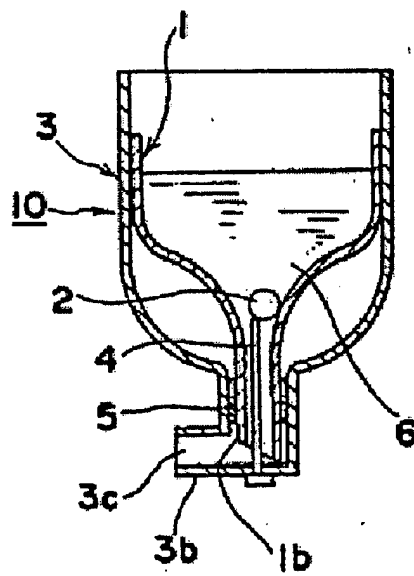
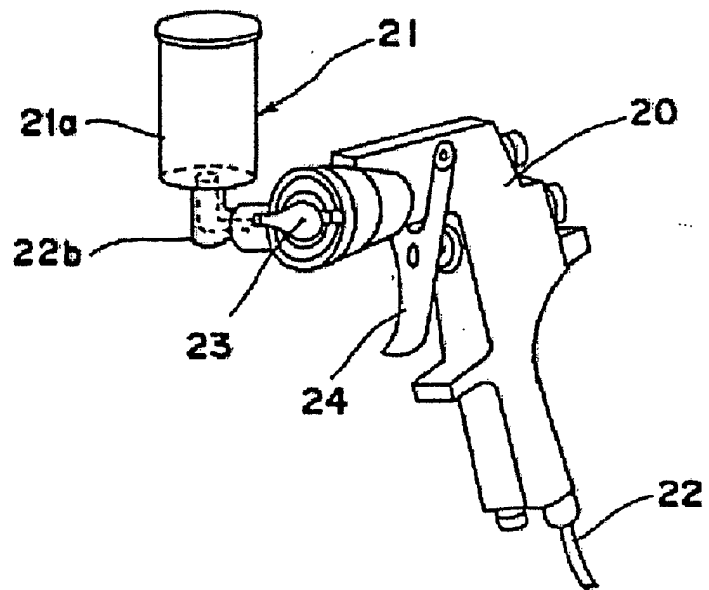


Fig. 4



EUROPEAN PATENT OFFICE

Patent Abstracts of Japan

PUBLICATION NUMBER : 01027659
PUBLICATION DATE : 30-01-89

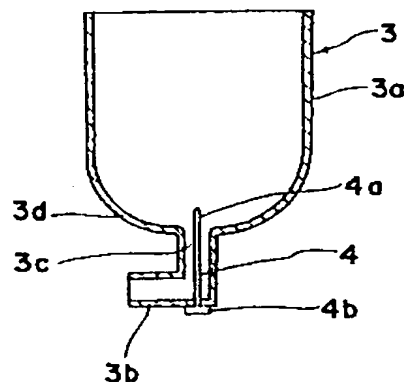
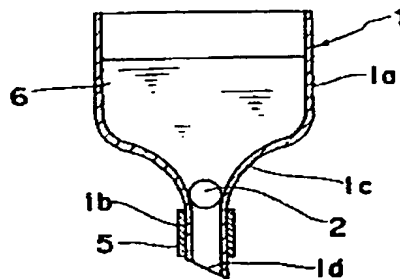
APPLICATION DATE : 21-07-87
APPLICATION NUMBER : 62181775

APPLICANT : KURABO IND LTD;

INVENTOR : YAGI KATSUMASA;

INT.CL. : B05B 7/02

TITLE : PAINT CONTAINER FOR SPRAY GUN



ABSTRACT : PURPOSE: To enable easy change of paints by mounting an inner container which stores paint in freely detachable manner on a cup of the main body, providing a valve means which is usually closed in the paint dispensing port at the bottom of the inner container and also installing a valve releasing means in a conduit pipe at the bottom of the main body.

CONSTITUTION: An inner container 1 which stores paint 6 is mounted in a freely detachable manner on a cup 3 of the main body. Further, a valve means 2 which is usually closed is installed in the paint dispensing port 1d provided at the bottom 1c of the inner container 1. In addition, a valve releasing means 4 which releases the valve means 2 when the inner container 1 is mounted on the cup 3 of the main body to set the paint dispensing port 1d inside a conduit pipe 3b installed at the bottom of the cup 3 is provided inside the conduit pipe 3b. Consequently, it is possible to change and replace paints rapidly and easily.

COPYRIGHT: (C)1989,JPO&Japio